Chess endgame news

Article

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CHESS ENDGAME NEWS

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Bleicher has used Bourzutschky's GTBGEN software to survey all Nalimov's 6-man pawnless DTM(ate) endgame tables (EGTs). He confirms that, as expected, there are no 6-man pawnless full-point, *fp*, mzugs. A complete review of 6-man mzugs awaits the last Nalimov 6-man P-ful EGTs. Bleicher's (2005) FREEZER can generate constrained EGTs, e.g., for 7-man endgames with blocked Pawns.

Bourzutschky (2005) has also announced the first results of his new collaboration with Yakov Konoval in Orenburg, Russia. Konoval has rethought algorithms, index-schemes and use of metrics, and has also programmed in Assembler-586 to deliver new levels of EGT generation performance. DTZ[2] is the metric of choice for efficiency of computation and storage: P-ful endgames' EGTs are computed in *P-slices*, each slice fixing Pawns.

The KRBNKRB DTZ EGT was computed in 17.5 days on one processor, raising the prospect of a multiprocessor chess-engine being able to compute 6-man EGTs, particularly those with Pawns, on demand during a game. The 'YK' EGTs are verified using Bourzutschky code completely independent of Konoval code to give excellent integrity assurance. Selected highlights from the results so far:

KRBNKRB: EGT confirms claimed Buj-Thiele win, missed in adjudication, 11th ICCF Finals (1983).
KRRNKRR: maxDTZ = 290, breaking the KRNKNN DTZ and DTM records
r7/5r1N/8/8/8/6R1/6R1/3K1k2 w, see Krabbé (2005). Interpretations of the line are invited.
KBBNNKQ: 1 fp mzug (n.b., just 2 Ns), left as a difficult construction challenge for the reader
the Bs are on opposite-coloured squares; DTZ = 7 with wtm and DTZ = 41 with btm
KBNNNKQ: 3 fp mzugs, one of which is 8/8/5N2/8/6N1/2kq1N2/8/2KB4 (DTZ = 4 & 67)
wtm: 1. Nh6 Qe3+! 2. Kb1 Qb6+ 3. Bb3 Qxb3+ 4. Kc1 Qc2# 0-1.
KNNNNKQ: 6 fp mzugs, the deepest of which is 8/8/8/5N1N/8/3k1qN1/8/2K4N (DTZ = 8 & 41)
Bourzutschky had previously computed a KNNNNKQ DTM EGT using GTBGEN

Kristensen (2005) has found that it is likely that Ordered Binary Decision Diagrams, OBDDs, do not lead to significantly better EGT compression than in Nalimov's EGTs. Hurd (2005) has demonstrated the use of Higher Order Logic to construct EGTs which are therefore formally verified[3] to logically follow from the laws of chess. Complete 6-man P-less $DTZ_{(50)}$ EGTs have been computed (Bourzutschky, Tamplin and Haworth, 2005), revealing some pathological positions. The Reference Fallible Agent, exercised on endgames (Andrist and Haworth, 2005) can also be used to assess (or detune computer-engine) play in game domains generally.

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[2] DTZ ≡ Depth to (move-count) Zeroing (move), i.e., to a P-push and/or change of force and/or mate.
[3] Assuming, as is inevitable, the integrity of the software used, including here a HOL4 and the BuDDy BDD engines.